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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,517	03/05/2002	Claude Jaussaud,	220040US2PCT	9383
22850	7590	06/03/2004		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER GUERRERO, MARIA F				
ART UNIT		PAPER NUMBER		
2822				

DATE MAILED: 06/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/069,517

Applicant(s)

JAUSSAUD ET AL.

Examiner

Maria Guerrero

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

1. This Office Action is in response to the Amendment filed December 9, 2003.

Claims 1-10 are canceled.

Claims 11-20 are pending.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 11 and 13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Linn et al. (U.S. 5,387,555).
4. Linn et al. teaches a method of creating an electrically conducting bonding between a face of a first semiconductor element and face of a second semiconductor element by heat treatment (col. 4, lines 1-15). Linn et al. discloses depositing at least one layer of material on the face of the first semiconductor element and at least one layer of material on the face of the second semiconductor element (Fig. 3a, 5a, col. 3, lines 49-56). Linn et al. teaches combining the layers to form a layer that provides electrically conducting bonding between the two faces (Fig. 3b, Fig. 5b, col. 3, lines 56-65, col. 4, lines 5-15). Linn et al. shows applying the first and second faces one against

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the other and carrying out a heat treatment (Fig. 3b, 5b, col. 3, lines 55-65). Linn et al. teaches reacting the layers of material to form a temperature stable mixture with respect to the first and second semiconductor elements (col. 3, lines 55-68, col. 5, lines 35-67, col. 6, lines 1-6). Linn et al. discloses not inducing any reaction product between the deposited layer of material and at least one of the semiconductor elements during the heat treatment (Fig. 4a-4b, col. 5, lines 35-67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 12 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Linn et al. (U.S. 5,387,555) in view of Goesele et al. (U.S. 5,877,070).

Linn et al. also teaches the interposed layers comprising a layer of tungsten and a layer of silicon that could be on one of or both faces (col. 8, lines 20-25). Linn et al. teaches forming WSi₂ during the heat treatment (Fig. 5b, col. 7, lines 3-15).

Regarding claim 17, Linn et al. does not specifically show the first and second semiconductor elements being SIC. However, Goesele et al. shows the use of SIC in the bonding process as conventional in the art (col. 3, lines 50-60, col. 6, lines 15-16).

Regarding claims 12 and 18-20, Linn et al. does not specifically show the preliminary step of forming a thin film by forming microcavities on a substrate by ionic

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implantation. However, Goesele et al. teaches forming the thin film on the substrate by forming microcavities using ionic implantation (col. 6, lines 15-20, col.10, lines 13-30).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Linn et al. reference by including the steps of forming the thin film on the substrate by forming microcavities using ionic implantation and using SIC as taught Goesele et al. in order to increase device performance and thermal stability.

Response to Arguments

6. Applicant's arguments filed December 9, 2003 have been fully considered but they are not persuasive. Claims 11-20 stand rejected.

Applicant argued that Linn et al. does not disclose an electrically conducting bonding between the two semiconductors faces because there is an electrically insulating material interposed between the semiconductor elements. However, Linn et al. discloses depositing at least one layer of material on the face of the first semiconductor element and at least one layer of material on the face of the second semiconductor element (Fig. 3a, 5a, col. 3, lines 49-56). Linn et al. teaches combining the layers to form a layer that provides electrically conducting bonding between the two faces (Fig. 3b, Fig. 5b, col. 3, lines 56-65, col. 4, lines 5-15). Linn anticipates the claims because the presence of the electrically insulating material does not constitute a teaching away. Linn et al. teaches combining the layers to form a layer that provides electrically conducting bonding between the semiconductors faces (Fig. 3a-3b, 4a-44b).

In addition, disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. In re Susi, 440 F.2d 442, 169 USPQ 423 (CCPA 1971).

Furthermore, during examination, the claims must be interpreted as broadly as their terms reasonably allow. This means that the words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); MSM Investments Co. v. Carolwood Corp., 259 F.3d 1335, 1339-40, 59 USPQ2d 1856, 1859-60 (Fed. Cir. 2001). In addition, the elements must be arranged as required by the claim, but this is not an ipsissimis verbis test, i.e., identity of terminology is not required. In re Bond, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yallup et al. "Buried Wsix SOI structures" (of record), Goh et al.

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"Buried metallic layers in silicon using wafer fusion bonding techniques" (of record) teach using wafer fusion bonding techniques with structures having metallic layers.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Guerrero whose telephone number is 571-272-1837.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Maria Guerrero
Maria Guerrero
Primary Examiner
May 28, 2004